

Application No: 10/069,742
Attorney's Docket No: NL 000357

AMENDMENTS TO THE CLAIMS

1.(currently amended): A method of determining a schedule ~~(205)~~ for executing a plurality of tasks ~~(301-308)~~ requiring a plurality of resources ~~(101-103, 109-113)~~, comprising ~~the steps of~~

(a) constructing a set of constraints from given requirements of each task ~~(301-308)~~ and from given limitations on each resource ~~(101-103, 109-113)~~;

(b) determining for each task ~~(301-308)~~ a relative starting time, a relative ending time and an assignment of resources ~~(101-103, 109-113)~~, based on the constraints from said set;

(c) determining for each task ~~(301-308)~~ an absolute starting time, an absolute ending time and a collection of times and associated task processing speeds, based on the determined relative starting time, relative ending time and assignment of resources ~~(101-103, 109-113)~~ for said task, minimizing any violation of the constraints from said set; and

(d) determining the schedule ~~(205)~~, comprising for each task ~~(301-308)~~ the determined absolute starting time, absolute ending time, collection of times and associated task processing speeds and assignment of resources ~~(101-103, 109-113)~~ to said task.

2.(currently amended): A method as claimed in claim 1, where ~~step (c) comprises~~ includes defining a sequence of windows (w_0, \dots, w_{15}) , a starting time of a window (w_0, \dots, w_{15}) from said sequence corresponding to one of the relative starting time and the relative ending time of a task ~~(301-308)~~, and an ending time of said window (w_0, \dots, w_{15}) corresponding to a starting time of a next window (w_0, \dots, w_{15}) in said sequence;

determining an absolute length of the windows (w_0, \dots, w_{15}) from said sequence, minimizing any violation of the constraints from said set;

determining for each window (w_0, \dots, w_{15}) a processing speed for each task ~~(301-308)~~ and creating for each task ~~(301-308)~~ a collection of times and associated task processing speeds based thereupon, minimizing any violation of the constraints from said set; and

determining for each task ~~(301-308)~~ the absolute starting time and the absolute ending time from the absolute length of the windows (w_0, \dots, w_{15}) .

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3.(currently amended): A method as claimed in claim 1, further comprising ~~the step of~~ determining whether any violation of the constraints has occurred, and if so, determining at least one of a new relative starting time for a task ~~(301-308)~~, a new relative ending time for a task ~~(301-308)~~, and a new assignment of a resource ~~(101-103, 109-113)~~ to a task ~~(301-308)~~; and
executing ~~step~~(c).

4.(currently amended): A method as claimed in claim 2, where the ~~step of~~ determining the absolute length of the windows (w_0, \dots, w_{15}) from said sequence ~~comprises~~ includes solving a linear programming problem.

5.(currently amended): A method as claimed in claim 2, where the ~~step of~~ determining for each window (w_0, \dots, w_{15}) a task processing speed for each task ~~(301-308)~~ includes ~~comprises~~ solving a linear programming problem.

6.(currently amended): A scheduler ~~(100)~~ for determining a schedule for executing a plurality of tasks ~~(301-308)~~ requiring a plurality of resources ~~(101-103, 109-113)~~, comprising
[[•]] constructing means ~~(201)~~ for constructing a set of constraints from given requirements of each task ~~(301-308)~~ and from given limitations on each resource ~~(101-103, 109-113)~~;
[[•]] ordering means ~~(202)~~ for determining for each task ~~(301-308)~~ a relative starting time, a relative ending time and an assignment of resources ~~(101-103, 109-113)~~, based on the constraints from said set;
[[•]] timing means ~~(203)~~ for determining for each task ~~(301-308)~~ an absolute starting time, an absolute ending time and a collection of times and associated task processing speeds, based

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on the determined relative starting time, relative ending time and assignment of resources ~~(101-103, 109-113)~~ for said task ~~(301-308)~~, minimizing any violation of the constraints from said set; and

[[•]] scheduling means ~~(204)~~ for determining the schedule, comprising for each task ~~(301-308)~~ the determined absolute starting time, absolute ending time, collection of times and associated task processing speeds and assignment of resources ~~(101-103, 109-113)~~ to said task ~~(301-308)~~.

7.(currently amended): A scheduler ~~(100)~~ as claimed in claim 6, where the timing means ~~(203)~~ are arranged to

define a sequence of windows (w_0, \dots, w_{15}) , a starting time of a window (w_0, \dots, w_{15}) from said sequence corresponding to one of the relative starting time and the relative ending time of a task ~~(301-308)~~, and an ending time of said window (w_0, \dots, w_{15}) corresponding to a starting time of a next window (w_0, \dots, w_{15}) in said sequence;

determine an absolute length of the windows (w_0, \dots, w_{15}) from said sequence, minimizing any violation of the constraints from said set;

determine for each window (w_0, \dots, w_{15}) a task processing speed for each task ~~(301-308)~~ and create for each task ~~(301-308)~~ a collection of times and associated task processing speeds based thereupon, minimizing any violation of the constraints from said set; and

determine for each task ~~(301-308)~~ the absolute starting time and the absolute ending time from the absolute length of the windows (w_0, \dots, w_{15}) .

8.(currently amended): A scheduler ~~(100)~~ as claimed in claim 6, being arranged to

determine whether any violation of the constraints has occurred, and if so, to

determine at least one of a new relative starting time for a task ~~(301-308)~~, a new relative ending time for a task ~~(301-308)~~, and a new assignment of a resource ~~(101-103, 109-113)~~ to a task ~~(301-308)~~; and

activate the timing means ~~(203)~~.

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9.(currently amended): A scheduler-(100) as claimed in claim 7, further comprising linear programming means-(206) for solving a linear programming problem.

10.(currently amended): A system having a scheduler-(100) as claimed in claim 6, and a plurality of resources-(101-103, 109-113), the system being arranged to execute the tasks-(301-308) on said plurality of resources-(101-103, 109-113) according to the schedule-(205) obtained from the scheduler-(100).

11.(new) A scheduler as claimed in claim 6, being arranged to determine a new processing speed during execution of a task.

12.(new) A scheduler as claimed in claim 6, wherein the processing speed is varied during execution of a task.

13.(new) A scheduler as claimed in claim 7, wherein the times in the collection of times are time points, at which time the processing speed of the task is changed to the task processing speed associated with that time point.

14.(new) A scheduler as claimed in claim 7, wherein two subsequent times in the collection of times encompass a time interval, during which the task processing speed remains constant, at the level of the given task processing speed associated with the lowest of the two times.